IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	10/529,161
Appellant:	Christian Mueller
Filed:	February 27, 2006
Title:	TEST HEAD POSITIONING APPARATUS
TC/A.U.:	3745
Examiner:	Frank D. Lopez
Confirmation No.:	2080
Docket No.:	ITC-331US

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the Notice of Panel Decision from the Pre-Appeal Brief Review dated June 7, 2010, Appellant is submitting this Substitute Appeal Brief for the above-identified application.

I. REAL PARTY IN INTEREST

The real party in interest is inTEST Corporation.

II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1, 2 and 4-24 are pending. Claims 1, 2, 4-17 and 19-21 are rejected. Claims 18 and 22-24 are objected to. Claims 1, 2, 4-17 and 19-21 have been appealed.

IV. STATUS OF AMENDMENTS

An Amendment after final rejection was filed on February 26, 2010. That amendment has been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 corresponds, for example, to an exemplary embodiment of the present invention shown in Appellants Fig. 3. Outer cylinder 8 is a first member. As described in the specification at page 8, line 19, carrier-arm device 2 is a support which is coupled to the first member (outer cylinder 8) for supporting a test head. A second member (i.e. piston 13) is arranged relative to outer cylinder 8. Thus, the first member (i.e. outer cylinder 8) is at least partial above and moves relative to the second member (piston 13). See Appellants specification at page 10, lines 20-21 ("outer cylinder 8 is pressed upward"). An interior of the first member (outer cylinder 8) and the top of the second member (piston 13) define a variable size fluid compartment within the first member (page 10, lines 16-17, "a sealed fluid-holding compartment 23 is thereby provided between piston 13 and a top end face 18 of outer cylinder 8"). A pressure regulator maintains a pressure within the fluid compartment (fluid-holding compartment 23) by allowing feeding or allowing removal of fluid from the fluid compartment responsive to a change of the pressure in order to increase or decrease size of the fluid compartment (page 11, line 21). A lifting device (i.e. lead screw nut 20 shown in Fig. 3) raises and lowers the second member in order to raise and lower the first member (specification, page 10, lines 11-13) by turning lead screw 21 (using a drive motor). Lead screw nut 20, along with lifting rod 14, moves vertically along stationery lead screw 21

upwardly or downwardly. The fluid compartment (i.e. 23) allows the first member (i.e. 8) to be moved independently of the lifting device (i.e. 20). See also specification, page 10, line 29-page 11, line 2.

In accordance with Appellant's claim 6, the present invention also relates to a positioning apparatus for positioning a test head. A drive mechanism corresponds to lead screw nut 20 (Fig. 3, page 10, lines 11-13) moves the test head in a vertical direction. A pneumatic compliant coupling mechanism includes a first member (i.e. outer cylinder 8) and a second member (i.e. piston 13). An interior of the first member and a top of the second member define a fluid compartment (page 10, lines 16-17). The pneumatic compliant coupling mechanism causes the compartment to change volume. By changing volume, a range of motion to the test head and the vertical direction is provided. The second member is positioned above the drive mechanism (Fig. 3) such that the drive mechanism moves the second member in order to move the test head in the vertical direction (page 10, lines 11-13). The fluid compartment allows the first member to be moved independently of the drive mechanism (page 10, line 29-page 11, line 2).

In accordance with Appellant's claim 9, the present invention also relates to a method of positioning a test head. Flow of fluid into and out of a variable size fluid compartment coupled to the test head is provided (page 10, lines 16-17). This increases or decreases the size of the fluid compartment. Increasing or decreasing the size of the fluid compartment increases or decreases the height of the fluid compartment respectively (page 11, line 21). The flow of fluid maintains a fluid pressure in the fluid compartment, fluidly suspending the test head in a substantially weightless condition. The fluid compartment (23) is positioned between the test head and the drive mechanism (21). The test head is mechanically moved to a desired position in a vertical direction using a drive mechanism which moves a member which forms a bottom of the fluid compartment (23). The member is raised and lowered in order to raise and lower the fluid compartment such that height of the fluid compartment is movable independently of the member (8) (page 10, line 29-page 11, line 2).

In accordance with Appellant's claim 14, a second member (i.e. piston 13) is coupled to a first member (i.e. out cylinder 8) such that the first member is slidable in a longitudinal direction (Fig. 3, page 10, lines 20-21). A carrier-arm device (i.e. carrier-arm device 2) carries the test head and is attached to the first member (Fig. 2). A lifting device (i.e. lead screw nut 20 shown in Fig. 3) raises and lowers the first member. An interior of the first member (8) and a top of the second member (13) forms a variable size fluid holding compartment inside the inside the first member (page 10, lines 16-17). A pressure generation device is connected via fluid line to the fluid holding compartment (23) and is designed to generate a fluid pressure force directed counter to the weight of the test head and the support arm device (page 14, lines 14-25). The first member (8) slides in relation to the second member (13) to vary the size of fluid holding compartment (23) and the pressure of the fluid holding compartment (23) is regulated via a pressure regulation device (26) so that the first cylinder member, together with the support arm device and the test head, are brought into a suspended position that is height adjustable (page 14, lines 14-25). The fluid compartment (23) allows the first member to moved independently of the lifting device (page 10, line 29-page 11, line 2).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-17 and 19-21 have been twice rejected under 35 U.S. C. §103 as obvious over Slocum (U.S. 5,931,048). The last paragraph of the first rejection, however, appears to be based on the second rejection. Thus, it is questioned whether there are indeed two separate rejections.

Based on the Interview Summary mailed on June 3, 2010, it is understood that all 112 rejections have been withdrawn.

VII. ARGUMENT

The PTO has stated that there are two separate rejections of Appellant's claims under 35 U.S.C. §103 as obvious over Slocum (U.S. 5,931,048). While it is unclear whether there are indeed two separate rejections, the two "stated" rejections in view of Slocum will be discussed separately.

First Stated Rejection of Appellant's Claims as obvious over Slocum

The first stated rejection of Appellant's claims in view of Slocum is set forth on page 4 and most of page 5 of the Official Action dated December 1, 2009.

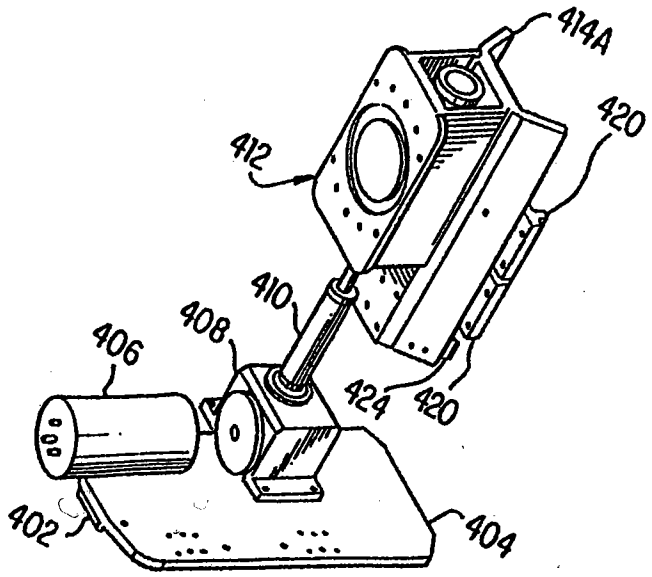
Appellant first wishes to state that part of the reason the rejection should be withdrawn is because the rejection is unclear. Appellant is not completely sure of the basis of the first rejection, and it is improper for Appellant to speculate as to the details of the rejection.

As best that Appellant can understand, Slocum discloses two separate embodiments. A first embodiment is illustrated in Fig. 4A of Slocum. A second embodiment is illustrated in Fig. 4B of Slocum. Fig. 4A of Slocum discloses lead screw 410. Fig. 4B of Slocum discloses variable chamber 472. As best understood, the Official Actions argument is that it would be obvious to combine the lead screw 410 of Fig. 4A with the variable chamber 472 of Fig. 4B. Exactly how these two components are being combined in order to reject Appellant's claims are not understood.

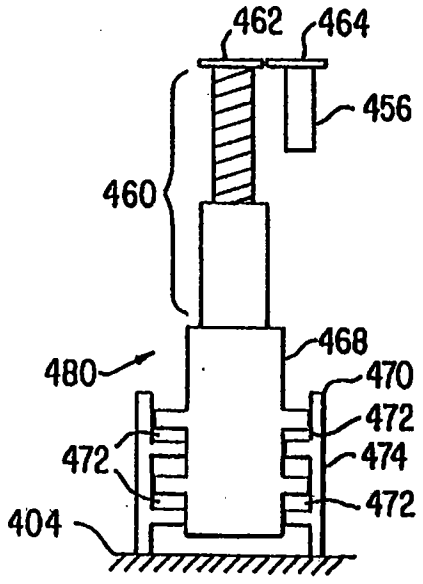
The details of how the two embodiments of Slocum are combined is set forth in the Official Action at page 5, first full paragraph where it is stated:

> ... it would have been obvious ... to add a first member to the second end of the apparatus of the first embodiment of Slocum et al., which defines a variable fluid compartment in an interior of the first member and a portion of the second member ...

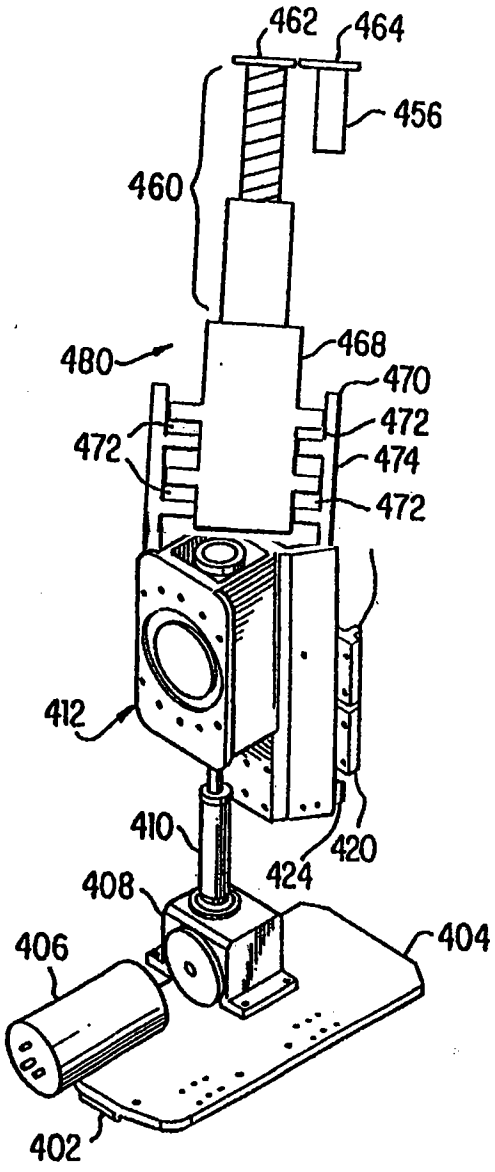
Appellant has attempted to visualize what this might look like. Thus, the first embodiment of Slocum looks like this:



... and the second embodiment of Slocum looks like this:



... to thus come up with the following combination (although this is not certain):



Of course, the "combination" which Appellant is hypothesizing is completely inoperative. In order for the variable chamber 472 of Slocum Fig. 4B to move the second member 468, the second member must be mounted to a solid base 404. The combination created by the Examiner causes supporting member 474 to be floating in air, thus destroying the operability of Slocums' Fig. 4B. Destruction of the operability of a reference renders a rejection improper.

Even if, for argument's sake, there was some way to combine the two references as hypothesized above, Appellant's claimed feature of "an interior of said first member and a top of said second member defining a variable size fluid compartment within said first member" would still be missing from the combination.

The first rejection concludes with a paragraph which is also not understood by Appellant:

> When the first member is added to the second member of the first embodiment (i.e. by accentually rotating the Fig. 4B embodiment by 180 degrees, such that the drive is at the bottom position and the first member is at top position), the support would be attached to the first member and fluid compartment would be formed by a top portion ...

It is not understood whether, in the last paragraph of the first rejection, the Official Action has turned Fig. 4B upside down before being placed on top of Fig. 4A or if the Official Action is simply looking at Fig. 4B, by itself, turned upside down. If Fig. 4B turned upside is being placed on top of Fig. 4A, Appellant's previous arguments still hold, the manner in which cavity is being fixed to a base has been destroyed and the claimed feature of "an interior of said first member and a top of said second member defining a variable size fluid compartment" is not met. If Fig. 4B, by itself, is turned upside, then this argument appears to be related to the second stated 103 rejection. In that case, it is not understood how the first 103 rejection and the second 103 rejection are different.

For the above reasons, withdrawal of the first stated rejection of Appellant's claims is respectfully requested.

The Second Stated Rejection of Appellant's Claims as Obvious over Slocum

Claims 1-17 and 19-21 have been rejected under 35 U.S.C. § 103 as being obvious over Slocum. Basically, the rejection is formulated by (a) adding the second Slocum embodiment to the first Slocum embodiment; and (b) rotating the second Slocum embodiment by 180°. The rejection is respectfully traversed. In traversing the rejection, Applicants rely on MPEP 2141:

> The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Court quoting *in re Kahn,* 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that "'[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasonsing with some rational underpinning to support the legal conclusion of obviousness.'" *KSR*, 550 U.S. at ___, 82 USPQ2d at 1396

The Official Action has modified Slocum's second embodiment, but has not provided the requisite "articulated reasoning with some rational underpinning." Absent articulated reasonsing for rotating this second embodiment 180°, the rejection is improper and should be withdrawn.

In addition, while the Official Action structures the rejection by rotating the second embodiment 180°, the modification to the second embodiment destroys the functionality of the device. Slocum's second embodiment includes a cavity 474

which is secured to base plate 404. If Slocum's second embodiment is rotated as the Official Action has suggested, cavity 472 would no longer be secured to base 404. In that case, it is not understood how Slocum's modified second embodiment would operate, as the cavity would no longer be secure to the base. Thus, the rejection is traversed because the alleged modification renders the second embodiment inoperable. There is case law that states that references can not be modified in a way that destroys the functionality of the device which is being modified.

Furthermore, because of the lack of detail regarding what the modified embodiment would look like, the rejection is incomplete. Applicant is unable to fully respond to the Official Action because Appellant does not have a clear picture of how the rejection has been formulated.

The rejection further states:

> Therefore, it would have been obvious at the time the invention was made to one having ordinary skill in the art to orient the second embodiment of Slocum et al., such that the drive mechanism is at the bottom of the positioning apparatus, as taught by the first embodiment of Slocum et al., since one having ordinary skill in the art would have been able to carry out such a reorientation and the resulting combination would predictably work in the same manner.

Again, the rejection is traversed because Applicants do not understand how the second embodiment can be "flipped over" as described in the Official Action. As the second embodiment of Slocum relies on the cavity attached to the base in order to function, the second embodiment will no longer be able to operate when the cavity and the base are detached as suggested by the Examiner. Furthermore, Applicants do not have a clear understanding of how the second embodiment could be flipped over and hence are unable to properly analyze the modification

suggested by the Official Action. In addition, KSR requires articulated reasons with rational underpinning, and without the mere use of conclusory statements. The rationale provided in the Official Action is that one of ordinary skill would flip over Slocum because of one of ordinary skill in the art could reorient Slocum. This is not an articulated reason with rational underpinning. Furthermore, the Official Action's logic that "such a reorientation and the result combination would predictably work in the same manner" is traversed because Applicants have no basis to determine whether, indeed, the resulting combination would predictably work in the same manner (if at all).

Regarding the second stated rejection using Slocum, the Examiner states in the Advisory Action:

> Even if the rejection which " rotates the second embodiment 180 degrees" is improper and withdrawn, the other rejection using Slocum is still applicable and therefore the claims are still rejected.

The Examiner further points out that the second rejection is based on a second embodiment with a drive mechanism at the top of the positioning apparatus and a first embodiment "in an order that is 180 degrees rotated from the order of the second embodiment." The Examiner then makes a conclusory statement: one of ordinary skill would recognize that the lifting device can be orientated in either orientation and would understand how to disconnect the cavity from the base and attach it to an element at the top of the apparatus. As such, the modified second embodiment would be operative ...

While Slocum indeed shows different embodiments, the statement in the Advisory Action that "one of ordinary skill ... would understand how to disconnect the cavity ... and attach it ..." is not a proper basis of rejection. In fact, Appellant completely disagrees with the above statement. It is a basic requirement of KSR case law that there must be an "articulated reasoning with some rational underpinning to support the legal conclusion" of obviousness. In the Advisory Action, there is no articulated reasoning. In the Advisory Action there is no rational underpinning. The second rejection is based on two different embodiments which

are disclosed in the Slocum patent. Why would one of ordinary skill in the art modify Slocums' embodiments as proposed by the Examiner? What is the reason? Why would an engineer take Slocums' allegedly functional positioner systems and start making changes to them?

Appellant has intentionally claimed "a variable size fluid compartment within said first member" and "said first member is at least partially above and moves relative to said second member." The synergy of these features is to provide fine tuning adjustment of the vertical position of a test head in a simple manner without excessive force. Thus, the first member can be raised without moving the second member to fine tune the position of the test head. Slocum lacks Appellant's claimed features and can not function in the manner that Appellant's claimed features function. Accordingly, Appellant's claims are patentable over the art of record.

Allowance of the above-identified application is respectfully requested.

Respectfully Submitted,

RatnerPrestia

Lawrence E. Ashery, Reg. No. 34,515
Attorney for Appellant

LEA/nm

Enclosures: Pending claims
Evidence Appendix
Related Proceedings Index

Dated: July 21, 2010

P.O. Box 980
Valley Forge, PA 19482
(610) 407-0700

977614

VIII. CLAIMS APPENDIX

1. A positioning apparatus for positioning a test head for testing electronic components, said positioning apparatus comprising:

a first member;

a support coupled to said first member for supporting the test head;

a second member arranged relative to said first member so that said first member is at least partially above and moves relative to said second member, an interior of said first member and a top of said second member defining a variable size fluid compartment within said first member;

a pressure regulator for maintaining a pressure within said fluid compartment by allowing feeding or allowing removal of fluid from said fluid compartment responsive to a change of said pressure in order to increase or decrease size of said fluid compartment, respectively;

a lifting device for raising and lowering said second member in order to raise and lower said first member;

wherein said fluid compartment allows said first member to be moved independently of said lifting device.

2. The positioning apparatus of claim 1 wherein said drive mechanism is a threaded drive mechanism.

3. (Cancelled)

4. The positioning apparatus of claim 1 wherein said fluid compartment is positioned above said drive mechanism such that when said drive mechanism drives said fluid compartment in a vertical direction, the test head is also driven in the vertical direction.

5. The positioning apparatus of claim 1 additionally comprising:

a position sensor for detecting a vertical position of the test head.

6. A positioning apparatus for positioning a test head for testing electronic components, said positioning apparatus comprising:

a drive mechanism for moving the test head in a vertical direction; and

a pneumatic compliant coupling mechanism including a first member and a second member, an interior of said first member and a top of said second member defining a fluid compartment, said pneumatic compliant coupling mechanism causing said compartment to change volume to provide a range of motion to the test head in the vertical direction, said second member being positioned above said drive mechanism such that said drive mechanism moves said second member in order to move the test head in the vertical direction;

wherein said fluid compartment allows said first member to be moved independently of said drive mechanism.

7. The positioning apparatus of claim 6 wherein said drive mechanism is threaded.

8. The positioning apparatus of claim 6 wherein said pneumatic compliant coupling mechanism is for maintaining a pressure within said fluid compartment such that the test head may be suspended in the substantially weightless condition.

9. A method of positioning a test head for testing electronic components, said method comprising the steps of:

(a) providing flow of a fluid into and out of a variable size fluid compartment coupled to the test head in order to increase or decrease size of the fluid compartment, respectively, in order to increase height and decrease height of said fluid compartment, respectively, wherein said flow of fluid maintains a fluid pressure in the fluid compartment, fluidly suspending the test head in a

substantially weightless condition, wherein the fluid compartment is positioned between the test head and the drive mechanism;

(b) mechanically moving the test head to a desired position in a vertical direction using a drive mechanism which moves a member which forms a bottom of the fluid compartment after step (a); and

(c) raising and lowering said member in order to raise and lower said fluid compartment wherein height of said fluid compartment is movable independently of said member.

10. The method of claim 9 further comprising a step of:

expanding and contracting the fluid compartment by respectively adding and removing fluid from the compartment.

11. The method of claim 9 further comprising a step of:

applying an external force to adjust the desired position of the test head.

12. The method of claim 9, wherein said flow of fluid is a flow of air.

13. The method of claim 9 further comprising a step of:

providing air flow out of the fluid compartment such that the substantially weightless condition of the test head is maintained.

14. A positioning apparatus for a test head of an electronic testing system for testing electronic components, said positioning apparatus comprising:

a first member;

a second member which is coupled to the first member such that the first member is slidable in a longitudinal direction;

a carrier-arm device that carries the test head and is attached to the first member;

a lifting device for raising and lowering the first member;

an interior of said first member and a top of said second member forming a variable size fluid-holding compartment inside the first member; and

a pressure generation device that is connected via a fluid line to the fluid-holding compartment and is designed to generate a fluid pressure force directed counter to the weight of the test head and the support arm device, wherein

the first member slides in relation to the second member to vary size of the fluid-holding compartment and the pressure in the fluid-holding compartment is regulated via a pressure regulation device in such a manner that the first cylindrical member, together with the support arm device and the test head, is brought into a suspended position that is height-adjustable in relation to the second cylindrical member, wherein said fluid compartment allows said first member to be moved independently of said lifting device.

15. The positioning apparatus as recited in claim 14, wherein the lifting device includes a part of the second member, being a lifting rod that is adjustable in height by means of a threaded drive mechanism.

16. The positioning apparatus as recited in claim 14, wherein the lifting device includes a part of the second member, being a threaded drive mechanism having a threaded drive centrally arranged inside the second member that is introduced into the hollow lifting rod.

17. The positioning apparatus as recited in clam 14, wherein the fluid-holding compartment is bounded at the top by a top end face of the first member and at the bottom by the second member.

18. The positioning apparatus as recited in claim 14, wherein the pressure regulation device comprises a pressure regulator to maintain a constant pressure in the fluid line leading to the fluid-holding compartment, and in the fluid line a 3/2-way valve and a one-way restrictor are provided and are connected in parallel with one another.

19. The positioning apparatus as recited in claim 15, wherein the lifting device includes a part of the second member, being a threaded drive mechanism having a threaded drive centrally arranged inside the second member that is introduced into the hollow lifting rod.

20. The positioning apparatus as recited in clam 15, wherein the fluid-holding compartment is bounded at the top by a top end face of the first member and at the bottom by the second member.

21. The positioning apparatus as recited in clam 16, wherein the fluid-holding compartment is bounded at the top by a top end face of the first member and at the bottom by the second member.

22. The positioning apparatus as recited in claim 15, wherein the pressure regulation device comprises a pressure regulator to maintain a constant pressure in the fluid line leading to the fluid-holding compartment, and in the fluid line a 3/2-way valve and a one-way restrictor are provided and are connected in parallel with one another.

23. The positioning apparatus as recited in claim 16, wherein the pressure regulation device comprises a pressure regulator to maintain a constant pressure in the fluid line leading to the fluid-holding compartment, and in the fluid line a 3/2-way valve and a one-way restrictor are provided and are connected in parallel with one another.

24. The positioning apparatus as recited in claim 17, wherein the pressure regulation device comprises a pressure regulator to maintain a constant pressure in the fluid line leading to the fluid-holding compartment, and in the fluid line a 3/2-way valve and a one-way restrictor are provided and are connected in parallel with one another.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS INDEX

None.